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Progress and Challenges With FAA's Facility Consolidation Effort

Statement of
Lou E. Dixon
Principal Assistant Inspector General
for Auditing and Evaluation
U.S. Department of Transportation



Mr. Chairman and Members of the Subcommittee:

Thank you for inviting me to testify on the Federal Aviation Administration's (FAA) air traffic facility realignment and consolidation effort, a key initiative for the Next Generation Air Transportation System (NextGen). FAA operates thousands of manned and unmanned air traffic control facilities that rely on ground-based technology, including 21 en route centers and 540 Terminal Radar Approach Control (TRACON) facilities and air traffic control towers—many of which have outlived their useful life and cannot take advantage of new technologies. This aging infrastructure, along with the development of NextGen, prompted FAA to establish the NextGen Future Facilities Special Program Management Office (SPMO). Last year, SPMO developed a plan to realign and consolidate the Agency's air traffic facility network that could fundamentally change the way FAA operates the National Airspace System (NAS) and significantly impact FAA's modernization efforts and air traffic workforce.

At the request of this Subcommittee, we initiated an audit to review FAA's realignment and consolidation activities and identify any associated challenges. My testimony today is based on this ongoing work and will focus on (1) FAA's plan for large-scale realignments and consolidations of its air traffic facility network, (2) key challenges that FAA faces in executing its plan, and (3) actions the Agency can take in the near term to successfully consolidate its facilities.

IN SUMMARY

FAA's realignment and consolidation plan, which it formalized last November, calls for consolidating en route centers and TRACONs into large, integrated facilities over the next 2 decades, beginning with a new integrated facility for managing airspace in the New York/New Jersey/Philadelphia metropolitan areas. However, FAA is early in its planning and has delayed making a final decision until next May on where to build the first facility. Regardless, FAA will still need to align consolidation plans with ongoing construction projects, make technical decisions that could significantly alter the cost and schedules for other modernization programs, finalize project cost estimates, and address associated workforce and community issues. Although FAA's consolidation plans are evolving, a number of near-term actions could better position the Agency for success. These actions include incorporating lessons learned from prior consolidation efforts, developing metrics to identify and track anticipated benefits, and determining how best to keep Congress and other stakeholders informed as the effort progresses.

BACKGROUND

According to FAA, the average age for an en route center is 49 years, while the average age of a TRACON is 28 years. In 2008, we reported that 59 percent of FAA facilities were over 30 years old and identified structural deficiencies and maintenance-related issues at many facilities. Consistent with our observations, FAA reported in 2010 that 83 percent of its facilities were in either poor or fair condition and that the infrastructure at some facilities would not support NextGen and other modernization initiatives.

Sustaining the existing air traffic control system requires the Agency to spend a significant portion of its capital budget to replace and maintain these aging facilities and related infrastructure. In fiscal year 2012, FAA plans to spend \$104 million to replace or improve TRACONs and air traffic control towers, \$47 million to maintain en route centers, and \$78 million to sustain electrical power systems.

On September 1, 2010, the FAA Administrator took an important step towards replacing this aging infrastructure by establishing the NextGen Future Facilities SPMO. SPMO is responsible for planning large-scale facility realignments and consolidations, developing requirements for these facilities, conducting relevant analyses, and coordinating these efforts with the Agency's other modernization programs.

FAA'S REALIGNMENT AND CONSOLIDATION PLAN FOCUSES ON LARGE-SCALE EFFORTS

FAA plans to realign and consolidate its en route centers and TRACONs into large, integrated facilities over the next 2 decades, beginning with facilities managing the New York/New Jersey/Philadelphia airspace. While these initial plans were approved last November, FAA has yet to make several key operational and logistical decisions regarding the first facility, including where to build it. Moreover, FAA has delayed a final approval for constructing the first site until next May, which will impact FAA's consolidation schedule for other locations.

FAA Has Initial Approval for Integrating Facilities in the Northeast

FAA's long-term plan, approved by its Joint Resources Council (JRC) in November 2011, represents considerable progress since our 2008 review, when the Agency's focus was primarily on the short term and on sustaining the existing infrastructure. The plan would divide the NAS into six geographic segments within the contiguous

OIG Report No. AV-2009-012, "FAA's Management and Maintenance of Air Traffic Control Facilities," December 15, 2008. OIG correspondence and reports are available on our Web site at http://www.oig.dot.gov/.

¹ En route centers guide airplanes flying at high altitudes through large sections of airspace, while TRACONs guide aircraft as they approach or leave airspace within 40 miles of an airport.

³ FAA National Policy Order 1110.154, "Establishment of Federal Aviation Administration Next Generation Facilities Special Program Management Office," September 1, 2010.

United States. Under the current plan, work on a new segment would begin every other year, with four to five facilities per segment, and all segments would be completed by 2034. Within each segment, TRACONs and en route centers would be combined into 1 of 2 types of facilities—each of which could house over 1,200 employees—based on operational requirements, airspace responsibility, and geographic location (see attachment 1):

- Integrated Control Facilities—which would provide expanded terminal airspace functions by combining TRACON operations with some en route center operations.
- High-Altitude Control Facilities ("High-Ops")—which would control high-altitude airspace currently monitored by en route centers, with some facilities monitoring oceanic air traffic.

As part of the initial approval of the overall plan, JRC also approved plans to realign and consolidate facilities starting in the Northeast. This segment will consolidate 45 TRACONs and 4 en route centers stretching from Chicago to New England, New York, and Philadelphia into 4 integrated facilities (see table 1). The plan, with an initial estimated life-cycle cost of \$2.3 billion, 4 calls for the four integrated facilities to be built with operations transferred from the individual TRACONs by 2023. JRC also allowed SPMO to move forward with a final investment analysis for the first facility—the Liberty Integrated Control—which includes airspace over the New York, New Jersey, and Philadelphia metropolitan areas.

FAA expects these integrated facilities will maximize operations and realize the benefits of airspace redesign initiatives, eliminate artificial airspace boundaries caused by the current air traffic facility network, and improve internal operations. It also anticipates that the new buildings will reduce the number of facilities requiring new equipment or upgrades, avoid the cost of maintaining aging facilities, and facilitate NextGen capabilities.

⁴ This estimate is adjusted for inflation, calculated over a 40-year life-cycle, and includes costs associated with the planning, construction, and equipage of the facilities. It does not include airspace redesign implementation, moving personnel via a permanent change of station, program management, and other indirect costs.

Table 1. Proposed Northeast Integrated Facilities

Proposed Integrated Facility	Current Facilities and Airspace To Be Transferred		
Liberty Integrated Control Facility	TRACONs within the New York Center's airspace, including the New York and Philadelphia TRACONs		
·	Airspace at or below 30,000 feet from the New York Center		
Lincoln Integrated Control Facility	TRACONs within the Chicago Center's airspace, including the Chicago and Milwaukee TRACONs		
•	Airspace at or below 30,000 feet from the Chicago Center		
Northeast Integrated	TRACONs within the Boston Center's airspace		
Control and High-Ops Facility	 Airspace at or below 30,000 feet from the Boston Center. 		
	 The facility will be co-located with operations from the New York and Boston Centers that control airspace at or above 31,000 feet, along with oceanic operations. 		
Great Lakes Integrated Control	TRACONs within the Cleveland Center's airspace, including the Pittsburgh, Cleveland, and Detroit TRACONs		
and High-Ops Facility	Airspace at or below 30,000 feet from the Cleveland Center.		
	 The facility will be co-located with operations from the Chicago and Cleveland Centers that control airspace at or above 31,000 feet. 		
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Source: FAA

Note: The names of the facilities are notional and do not indicate where FAA plans to build these facilities. Attachment 2 lists TRACONs and en route centers that could be transferred to each of the four integrated facilities.

FAA's Decisions Regarding the First Site Have Been Delayed

FAA has pushed its decision to approve construction for the first facility from November 2012 to May 2013. This is primarily due to delays in selecting a site for the facility and tight funding limits called for in its recently passed reauthorization. FAA officials noted that the delay will affect FAA's schedule for consolidating other locations within the first segment, though the impact has not yet been determined. FAA's decision involves determining complex operational, logistical, and workforce aspects of the consolidation, including the following:

- the facility's airspace boundaries and total operating positions
- the size of the building
- the total number of controllers, technicians, and other employees working at the facility
- the automation and other equipment to be installed
- transition schedules for existing facilities to move to the new building
- workforce-related issues

FAA officials stated that plans for future projects could change based on experiences with the first locations. These adjustments may include changing the number and size of integrated facilities built or constructing two buildings on one site to allow for differences in operations.

FAA FACES KEY TECHNICAL, FINANCIAL, AND WORKFORCE CHALLENGES IN EXECUTING ITS PLAN

Successfully implementing FAA's plans for large-scale realignments and consolidations—and avoiding future risks—will require the Agency to address a number of challenges. These include aligning approved construction projects with its consolidation plan; making key decisions related to automation platforms, airspace redesign efforts, and other technical factors; finalizing project cost estimates and funding sources; and addressing associated workforce and community issues.

Approved TRACON Construction Projects Have Not Been Aligned With FAA's Large-Scale Plan

While FAA's large-scale plans prompted the Agency to halt all realignment and consolidation activities except one small TRACON consolidation,⁵ the Agency is moving ahead with plans to maintain or replace some of its aging terminal facilities and has not aligned some of these construction projects with its consolidation efforts.

FAA has cancelled plans for consolidating the West Palm Beach TRACON functions into the Miami TRACON and has deferred previously approved TRACON consolidations in Michigan, Ohio, and Illinois until further decisions are made. FAA also has no plans to consolidate any of its en route centers but will focus on sustaining these facilities while it analyzes future consolidations.

However, FAA is moving ahead with plans to construct two new TRACONs in Cleveland, OH, and Kalamazoo, MI, which were approved for construction before FAA approved the large-scale plan. These new facilities overlap with the plans for the Lincoln NE, and Great Lakes integrated facilities and may not be needed if FAA decides to consolidate those TRACONs' functions into larger, integrated facilities.

FAA officials are aware of the potential overlap and expect to make a decision on whether to consolidate the two TRACONs into integrated facilities at a later date. FAA also recently reorganized the SPMO and other Air Traffic Organization facility planning groups under its Air Traffic Control Facilities Directorate. FAA expects this

5 The Abilene, TX, TRACON functions could be transferred to the Dallas/Ft. Worth TRACON as early as this October but more likely sometime next year.

The planned consolidations included combining the Cleveland, Youngstown, Mansfield, Toledo, Akron, and Toledo, OH, TRACON functions to a new TRACON in Cleveland; combining the Muskegon, Lansing, Grand Rapids, and Kalamazoo, MI, TRACON functions into a new TRACON in Kalamazoo; and transferring the Champaign, IL, TRACON functions to the Chicago TRACON.

reorganization will enable it to better coordinate its large-scale efforts with its other facility construction and modernization efforts.

Technical Decisions for the First Integrated Facility Will Impact the Current Modernization Plan

FAA's modernization plans are based on the current facility set-up for en route centers and TRACONs—not consolidated or integrated facilities. According to FAA, the Agency is in the early stages of defining the technical requirements for an integrated facility and making decisions about major acquisitions. These decisions will impact the Agency's future modernization plans and budgets, including NextGen (see table 2). For example, the En Route Automation Modernization (ERAM) program is currently being deployed to 20 en route centers, including locations in the Northeast where the first integrated facilities could be built. However, FAA has not made changes in its Capital Investment Plan, and the full extent of the changes will not be known until FAA solidifies its plans for the integrated facilities.

Table 2. Key Modernization Programs Impacted by Large-Scale Consolidations

Program	Description	Estimated Cost \$2.1 billion	
ERAM	Replace and significantly enhance existing hardware and software at the 20 FAA Centers that manage high-altitude air traffic. ERAM is FAA's key platform for NextGen to process flight data across the NAS.		
Terminal Automation Modernization and Replacement (TAMR)	odernization and controllers rely on to manage traffic in the vicinity of		
NAS Voice System (NVS)	· · · · · · · · · · · · · · · · · · ·		
Federal Route data for all of the NextGen programs and FAA initiatives. Without FTI, NVS will be unable to complete its mission as a networked back-up voice communications system.		\$2.4 billion	

Source: OIG analysis, based on FAA data

These decisions also require coordination among FAA's various modernization programs from a technical, cost, and schedule standpoint. FAA has begun coordinating these efforts, which includes developing "Portfolio Level Agreements" that define the roles, responsibilities, and critical interdependencies needed to support the transition to integrated facilities, some of which have already been signed. This is a key watch item for Congress given that the integrated facility plan will require cost and schedule changes to several major acquisitions.

FAA's Initial Business Case Does Not Include Key Assumptions Needed To Estimate Costs and Identify Funding Sources

FAA has not finalized the estimated costs to construct, staff, and maintain the first four integrated facilities—a critical element of a long-term effort of this magnitude. As shown in table 3, FAA's initial business case estimated that it will spend \$1.8 billion from fiscal years 2011 through 2017 and a total of \$5.3 billion to construct and maintain the four Northeast facilities over a 40-year life cycle.⁷

Table 3. Initial Cost Estimates for Planned Northeast Facilities (\$ in Millions)

Type of Costs	Fiscal Years 2011 Through 2017	Fiscal Year 2018 and Beyond	Total
Facility Construction and Equipment Costs	\$1,556.9	\$751.2	\$2,308.1
Airspace Redesign, Modernization, Sustainment, and Other Indirect Costs	\$160.2	\$2,424.2	\$2,584.4
Permanent Change of Station Costs	\$35.8	\$303.4	\$339.1
Program PC&B Costs	\$29.8	\$42.1	\$71.9
Total	\$1,782.7	\$3,520.8	\$5,303.5

Source: OIG, based on FAA data. Figures may not add up due to rounding.

However, FAA's initial business case does not include key assumptions to fully estimate the projected costs of integrated facilities. For example, the initial business case is site neutral, assumes no reduction in controller staffing, and does not consider the cost differences of different metropolitan areas when calculating projected costs. FAA anticipates that a more detailed cost and benefit analysis for the first integrated facility will be completed before the investment decision next May.

Another challenge is determining how to pay for the projects in a tight budget environment. When the overall plan was approved last November, FAA estimated that \$2.3 billion was needed to construct and equip the first four integrated facilities. However, with the funding limits called for in FAA's reauthorization, FAA officials indicated that it is considering alternative financing sources and other acquisition strategies to pay for the projects. These include partnerships with local and other government agencies, public-private partnerships, and using the proposed Federal infrastructure bank.

This estimate is adjusted for inflation and includes costs for building construction and equipment acquisition; airspace redesign implementation, facility modernization and sustainment, equipment refresh, and other indirect costs; movement of personnel via permanent change of station costs; and the personnel salary and benefit (PC&B) costs for Agency staff tasked with overseeing the four projects.

In its fiscal year 2013 budget request, FAA is requesting \$225 million for fiscal year 2012 and \$95 million to plan and build the Liberty Integrated Control Facility.

The Impact of Large-Scale Realignments and Consolidations on FAA's Air Traffic Control Workforce Further Complicates FAA's Plan

The success of FAA's plans also depends on how it addresses significant workforce issues. Large-scale realignments and consolidations will require the movement of thousands of employees and their families. Facility consolidations will also require FAA to collectively bargain with its unions. Several potentially contentious issues will be subject to negotiation, such as pay, employee bidding, training, and moving expenses. FAA will be further challenged to ensure that future agreements are cost effective and do not present opportunities for waste or abuse. FAA is working closely with its bargaining units to gain consensus regarding these issues, though formal negotiations have yet to begin.

While national leadership of the National Air Traffic Controllers Association has expressed support for the integrated facility concept, there may be opposition from employees at local facilities. During our visits to the New York Center and New York TRACON, FAA and union officials indicated that they would oppose plans to build an integrated facility outside of Long Island. They stated that many employees would be unlikely to move from the area due to their connections to the area and their spouses' jobs. In addition, FAA management from the New York TRACON estimates that approximately 30 percent of its controller workforce is eligible to retire, and, if forced to move to a facility outside of Long Island, many may opt to retire instead.

Addressing Economic and Infrastructure Impacts on Local Communities Could Create Roadblocks

Realigning and consolidating air traffic facilities will likely have significant economic, infrastructure, and lifestyle impacts on local communities gaining and losing facilities as it involves moving potentially hundreds of employees across state lines. These impacts would be similar to those seen during the Department of Defense's (DOD) Base Realignment and Closure (BRAC) Commission activities. A 2009 study contracted by DOD on the impact that BRAC activities had on local communities in Maryland found that the changes increased demands on local hospitals, police and fire services, and schools and called for plans to address transportation concerns, such as increased traffic on local and state highways.⁹

These impacts may create roadblocks to FAA's consolidation and realignment efforts. As FAA is aware with past consolidations, communities losing their facilities have taken steps to delay or prevent the moves, often based on information obtained from impacted employees and local officials. For example, during the Palm Springs to Southern California TRACON consolidation in 2007, local communities expressed concerns whether the Southern California TRACON had adequate staffing levels to

^{9 &}quot;APG Regional Workforce Analysis: Chesapeake Security & Security Corridor," New Economies Strategies and AKRF, Final Report, December 2009.

accommodate an additional 220,000 air traffic operations that were being transferred. These concerns led to the consolidation being delayed by 1 month as local representatives raised these issues with FAA.

LEARNING FROM PAST EFFORTS AND ESTABLISHING METRICS AND OVERSIGHT MECHANISMS WILL BETTER POSITION FAA FOR SUCCESS

Some of FAA's past facility consolidations did not produce expected cost savings and operational benefits. As FAA's current consolidation plan continues to evolve, FAA can take a number of actions that could help it avoid previous pitfalls and better position it for success over the long term. These include developing metrics for measuring the success of its initial consolidations and providing Congress and other stakeholders updated information regarding its efforts and the impacts on FAA's other modernization efforts.

Incorporating Past Lessons Into the Current Plan and Developing Metrics Could Help FAA Mitigate Future Risks

FAA's last major consolidation effort occurred in the 1990s, when the Agency built a series of TRACONs in major metropolitan areas to consolidate and improve air traffic operations. In 2004, FAA completed a study that compared projected costs, schedules, and operational efficiencies of the Atlanta, Northern California, and Potomac Consolidated TRACONs to actual results. ¹⁰ The study, along with our interviews with facility personnel, showed that (1) the costs of these consolidations were higher than originally estimated, (2) facility openings were delayed, and (3) operational efficiencies were not achieved (see table 4).

^{10 &}quot;Evaluation of Large Terminal Radar Approach Control Facilities Consolidation Benefits;" Report # 2003-23; Original Report Date December 31, 2003; Revised April 2004.

Table 4. Cost Increases, Schedule Delays, and Other Impacts of Past Large-Scale Consolidation Efforts

Cost Increases	Schedule Delays	Other Impacts	
Atlanta Consolidated TRAC	ON		
Operations and maintenance costs were 53 percent higher than estimated, mostly due to negotiated controller pay increases.	9 months due to the unavailability of the Standard Terminal Automation Replacement System (STARS)	Operational efficiencies were not achieved because (1) controllers transferred from smaller facilities wer unable to certify at the consolidated facility and (2) a decision to change the configuration of a proposed runway at Atlanta Hartsfield Airport delayed the runway's completion and invalidated user benefit assumptions made during the original cost-benefit analysis.	
Northern California Consol	dated TRACON		
Construction costs were 45 percent higher than originally estimated. ATC staffing costs were 28 percent higher due to controller pay increases.	22 months due to the unavailability of STARS and two budget cuts during project construction.	Due to the delay in opening the TRACON, controllers received negotiated pay increases well before actually transferring to the new site and caused FAA to incur close to \$400,000 in reverse commute costs for six controllers who transferred to the new TRACON early and had to commute back to their old facility to work.	
Potomac TRACON (Baltimo	re-Washington DC)		
Construction and equipage costs were 46 percent higher than estimated due to the subsequent inclusion of the Richmond TRACON into the new facility and a change in automation systems. Staffing costs were 24 percent above budget.	7 months due to the inclusion of the Richmond TRACON, requiring an increase to the size of the building, and the unavailability of STARS.	While the consolidation improved operational coordination within the facility, it did not result in extensive airspace redesign, staff reductions, or equalized work between operating sectors. Facility management noted a loss of about 25 percent of the originally anticipated user benefits. The consolidation also resulted in controllers monitoring the Richmond-area airspace, a slower and less complex sector, earning the same pay as controllers monitoring busier, more complex airspace.	

Source: FAA

Incorporating lessons from its previous efforts in the current consolidation plan would help FAA achieve a successful outcome—especially since it is facing similar challenges. For example, decisions regarding what automation or equipment will be installed or how ongoing modernization projects will be affected could delay construction of the first integrated site; this occurred at the Northern California Consolidated TRACON due to the unavailability of an automation system.

Developing metrics that measure whether expected operational efficiencies and potential cost savings from the first integrated facility are actually achieved could further help FAA mitigate future risks. Considering that FAA's large-scale plans span a period of 20 years in six segments, measuring the success of early realignments and consolidations will be critical to determine whether the Agency needs to modify plans and expectations for future efforts.

Informing Stakeholders of Cost and Schedule Changes and Risks Would Further Position FAA for Success

As key partners in the Nation's air traffic facility realignment and consolidation, it is critical that FAA provide Congress and other stakeholders with timely, detailed information regarding plans and plan changes, the risks associated with individual sites and the overall plan, and the impact that large-scale realignment and consolidations will have on FAA's other modernization efforts. Such information will allow Congress and the aviation community to determine whether FAA's efforts are on track or if changes to the plan are needed—particularly while FAA is still early in its planning.

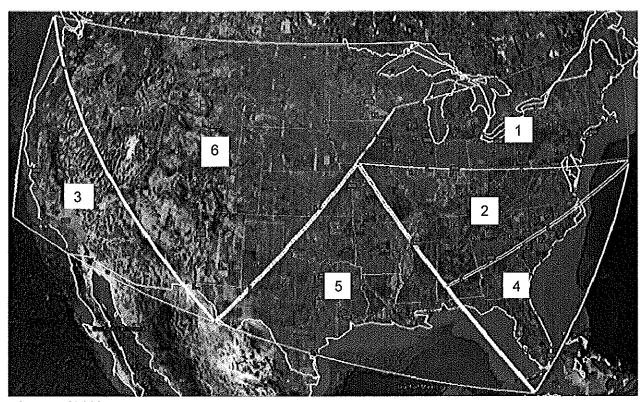
Some key watch items for this Subcommittee in the near term are (1) FAA's decision on where to build the first integrated facility, (2) final cost estimates for the first facility, (3) FAA's metrics for measuring the success of its first facility, and (4) the impact that FAA's large-scale plans will have on its other modernization efforts.

CONCLUSION

FAA's efforts to modernize the NAS are critical for meeting the anticipated demand for air travel. The extent to which FAA realigns and consolidates the Nation's air traffic control facilities will be an important and complex component of these efforts. FAA's plans for large-scale integrated facilities represent significant steps on the path to achieving greater operational efficiencies. However, successfully implementing this plan will require the Agency to address significant challenges and make difficult decisions regarding the cost, schedule, and technical capabilities required for the effort. As FAA's plan evolves, addressing these issues early, including learning from prior consolidation efforts, will better position the Agency to achieve airspace and operational efficiencies, potential cost savings, and the benefits from NextGen.

This concludes my statement. I would be happy to address any questions from the Chairman or Members of the Subcommittee at this time.

ATTACHMENT 1. FAA'S SIX AIRSPACE SEGMENTS FOR REALIGNING AND CONSOLIDATING AIR TRAFFIC FACILITIES



Source: SPMO

Segment 1: Chicago through New England, New York, and Philadelphia

Segment 2: Baltimore/Washington, DC to Atlanta and St. Louis

Segment 3: West Coast from California and Oregon to the Arizona Border

Segment 4: Southern Atlantic Region Including the Eastern Carolinas, Georgia (South of Atlanta) Through Florida

Segment 5: Gulf Coast Including Louisiana and Texas, Extending Through Arkansas

Segment 6: Midwest and Rocky Mountains Extending through Washington State

ATTACHMENT 2. PLANNED SEGMENT 1 INTEGRATED FACILITIES

Component Facilities	Radar Positions	ATC Positions	Certified Controllers	Technicians	Other Staff	Total FTEs
Liberty Integrated Control Facility						•
New York En Route Center (partial); New York, Philadelphia, Allentown, Wilkes-Barre, Binghamton, Elmira, Harrisburg, and Reading TRACONs	86	169	625	156	57	838
Lincoln Integrated Control Facility						
Chicago En Route Center (partial); Chicago, Milwaukee, Kalamazoo, Fort Wayne, Grand Rapids, Muskegon, South Bend, Waterloo, Cedar Rapids, Champaign, Quad City, Madison, Peoria, and Rockford TRACONs	99	174	730	208	42	980
Great Lakes Integrated Control and I	ligh Ops F	acility				
Cleveland and Chicago En Route Centers (partial); Detroit, Cleveland, Flint, Lansing, Saginaw, Mansfield, Toledo, Buffalo, Akron-Canton, Clarksburg, Erie, Pittsburgh, Rochester, and Youngstown TRACONs	123	241	920	224	139	1,283
Northeast Integrated Control and Hig	ıh Ops Fac	ility				
Boston and New York En Route Centers (partial); Boston, Albany, Cape, Yankee, Bangor, Burlington, Providence, Portland, and Syracuse TRACONs	88	201	716	244	67	1,027

Source: FAA

Note: The names of the facilities are notional and do not indicate where FAA plans to build these facilities.